

Appl. No. 10/043,344

Reply to Office Action of January 21, 2004

Amendments to the Claims:

Without prejudice or disclaimer, please cancel claims 1-13 and 15-17; amend claim 14; and add new claims 18 to 27, as shown in the below Listing of Claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

## Claims 1-13 (Cancelled)

Claim 14 (Currently Amended) An immunogenic composition, comprising at least one active component selected from the group consisting of:

- (A) a purified and isolated nucleic acid molecule encoding a transferrin receptor protein of a strain of *Haemophilus* or a fragment or an analog of the transferrin receptor protein;
- (B) a purified and isolated nucleic acid molecule having a DNA sequence selected from the group consisting of:
  - (a) any one of the DNA sequences set out in Figure 3, 4, 5, 6, 7, 8, 9, 10 or 11 (SEQ ID NOS: 1, 2, 3, 4, 105, 108, 110, 112, 114) or the complementary DNA sequence of any one of said sequences;
  - (b) a DNA sequence encoding one of the amino acid sequences set out in Figure 3, 4, 5, 6, 7, 8, 9, 10, 11 or 31 (SEQ ID NOS: 5, 6, 7, 8, 9, 10, 11, 12, 106, 107, 109, 111, 113, 115) or the complementary DNA sequence thereof; and
  - (c) a DNA sequence which hybridizes under stringent conditions to any one of the DNA sequences defined in (a) or (b);
- (C) a recombinant transferrin receptor protein or fragment or analog thereof producible in a transformed host containing an expression vector comprising a nucleic acid molecule as defined in (A) or (B) and expression means operatively coupled to the nucleic acid molecule for expression by the host of the recombinant transferrin receptor protein or fragment or analog of the transferrin binding protein;
- (D) an isolated and purified Tbp1 protein of a strain of *Haemophilus* free from the Tbp2 protein of the *Haemophilus* strain;
- (E) an isolated and purified Tbp2 protein of a strain of *Haemophilus* free from the Tbp1 protein of the *Haemophilus* strain;
- (F) an immunogenic truncated Tbp2 protein of a strain of *Haemophilus*;

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(g) a synthetic peptide having no less than six amino acids and no more than 150 amino acids and containing an amino acid sequence corresponding to a portion of a transferrin receptor protein of a strain of bacteria or of an analog of the transferrin receptor protein; and  
(E) a live vector for delivery of transferrin receptor to a host, comprising a vector containing the nucleic acid molecule of (A) or (B);  
and a pharmaceutically acceptable carrier therefor, said at least one active component producing an immune response when administered to a host.

Claims 15-17 (Cancelled)

Claim 18 (New) The immunogenic composition of claim 14, wherein the strain of bacteria is a *Haemophilus* strain.

Claim 19 (New) The immunogenic composition of claim 18, wherein the *Haemophilus* strain is a *Haemophilus influenzae* strain.

Claim 20 (New) The immunogenic composition of claim 19, wherein the *Haemophilus influenzae* strain is a *Haemophilus influenzae* type b strain.

Claim 21 (New) The immunogenic composition of claim 20, wherein the *Haemophilus influenzae* type b strain is selected from the group consisting of DL63, MinnA and Egan.

Claim 22 (New) The immunogenic composition of claim 19, wherein the *Haemophilus influenzae* strain is a non-typeable *Haemophilus influenzae* strain.

Claim 23 (New) The immunogenic composition of claim 22, wherein the non-typeable *Haemophilus influenzae* strain is selected from the group consisting of PAK12085, SB12, SB29, SB30, SB32 and SB33.

Claim 24 (New) The immunogenic composition of claim 14, wherein the synthetic peptide is selected from the group consisting of the peptides as presented in Tables 2 and 3.

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Claim 25 (New) The immunogenic composition of claim 14, wherein the synthetic peptide is comprised of the amino acid sequence, LEGGFYGP (SEQ ID NO: 74) or LEGGFYG (SEQ ID NO: 85).

Claim 26 (New) The immunogenic composition of claim 25, wherein the synthetic peptide is selected from the group consisting of:

LEGGFYGPKGEELGFRFLAGDKKVFVFSK (SEQ ID NO: 50),

FTSEGTLEGGFYGPEGQELGGKFLAHDKKVLGVFS (SEQ ID NO: 61) and

LEGGFYGP (SEQ ID NO: 74).

Claim 27 (New) The immunogenic composition of claim 26, wherein the synthetic peptide is LEGGFYGP (SEQ ID NO: 74).